

## **REMARKS/ARGUMENTS**

In an Office Action mailed September 30, 2003 (Paper No. 2), the drawings were objected to for noted informalities. Claims 1, 3, 5, and 6 were rejected under 35 U.S.C. 103(a) as being unpatentable over Neal in view of Mohammed and Johnson. Claim 2 was rejected under 35 U.S.C. 103(a) as being unpatentable over Neal, Mohammed and Johnson, and further in view of Goldberg. Claim 4 was rejected under 35 U.S.C. 103(a) as being unpatentable over Neal, Mohammed, and Johnson as applied to claim 1 and further in view of Gaillard et al. Claim 7 was rejected under 35 U.S.C. 103(a) as being unpatentable over Neal, Mohammed, and Johnson as applied to claim 1 and further in view of Angle et al. Claim 8 was rejected under 35 U.S.C. 103(a) as being unpatentable over Neal, Mohammed, and Johnson as applied to claim 1 and further in view of Odawara et al. Claims 9, 10, 16, 17, and 18 were rejected under 35 U.S.C. 103(a) as being unpatentable over Neal, Mohammed, and Johnson as applied to claim 1 above, and further in view of Pemmaraju. Claims 11 and 15 were rejected under 35 U.S.C. 103(a) as being unpatentable over Neal, Mohammed, Johnson, and Pemmaraju as applied to claim 9 above, and further in view of Flynn. Claims 12, 13 and 20 were rejected under 35 U.S.C. 103(a) as being unpatentable over Neal, Mohammed, Johnson, and Pemmaraju as applied to claims 9 and 17 above, and further in view of Goldberg. Claims 14 and 19 were rejected under 35 U.S.C. 103(a) as being unpatentable over Neal, Mohammed, Johnson, and Pemmaraju as applied to claims 9 and 17 above, and further in view of Angle. These rejections are respectfully traversed.

### **Objections to the Drawings**

Amendments to the specification have been submitted to address the noted informalities with the drawings. No new matter has been added. Withdrawal of the objections to the drawings is respectfully requested.

### **Rejections under 35 U.S.C. 103**

Claims 1, 3, 5, and 6 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Neal in view of Mohammed and Johnson. This rejection is respectfully traversed.

Neal in view of Mohammed and Johnson fail to provide a prima facie basis for the rejection of claims 1, 3, 5, and 6 under 35 U.S.C. 103(a), as they fail to disclose each element of

the claimed invention. For example, claim 1 includes a "cable modem having a programmable media access controller." Neal does not disclose a cable modem. While a LAN interface 16 is shown, there is no suggestion anywhere in Neal that it can be used as a cable modem. Anyone that has ever tried to connect a cable to a LAN interface instead of a cable modem can readily attest that a LAN interface and a cable modem are entirely different devices.

Johnson also fails to disclose a cable modem. The only cited reference that discloses a cable modem is Mohammed, and to the extent that a cable modem is even disclosed in Mohammed, it is only shown as a block for connecting a headend server 8 and a client 22 to a cable 20. The simple "cable modem" of Mohammed merely provides a one-way receiver for receipt of data from headend server 8, and it is not a network device that receives and transmits data. It uses an analog modem and a separate communications medium such as telephone line 36 for upstream communications. There is no mention of a media access controller in Mohammed, Neal, or Johnson, and one of ordinary skill in the art would have no idea from Mohammed, Neal or Johnson what a media access controller is, much less that a media access controller would be needed in the cable modem 14 or cable modem 28 of Mohammed, much less one that is programmable. "The invention must be viewed not with the blueprint drawn by the inventor, but in the state of the art that existed at the time." *Interconnect Planning Corp. v. Feil*, 774 F.2d 1132, 1138 (Fed. Cir. 1985). Therefore, Neal in view of Mohammed and Johnson fails to provide a prima facie basis for the rejection of claim 1. Claims 3, 5, and 6 depend from claim 1, and are allowable for at least the reasons that they depend from an allowable base claim and add limitations not present in the prior art.

Claim 2 stands rejected under 35 U.S.C. 103(a) as being unpatentable over Neal, Mohammed and Johnson, and further in view of Goldberg. This rejection is respectfully traversed.

Neal, Mohammed, Johnson and Goldberg fail to provide a prima facie basis for the rejection of claim 2, because they fail to disclose each element of the claimed invention. As described above, Neal, Mohammed and Johnson fail to disclose a cable modem with a programmable media access controller. While the copy of Goldberg provided by the Examiner is incomplete, truncated along the edge, and difficult to read, it is nonetheless possible to discern that Goldberg also fails to disclose a programmable media access controller. For example, Goldberg states at what appears to be page 69, in the first paragraph of the article, that "[b]y

rolling out the first integrated implementation of the cable industry's recently developed DOCSIS, Broadcom Corporation has paved the way for the rapid development of inexpensive consumer-oriented cable data appliances." Thus, Goldberg discloses a media access controller that has DOCSIS implemented as an *integrated cable modem device*. As noted in the specification at page 5, the "MCNS group has promulgated the Data Over Cable Service Interface Specification (DOCSIS). Other standards, such as DAVIC/DVB have likewise been created. Such standards continue to evolve over time, with the frequent inclusion of additional feature sets. Previously, *integrated cable modem devices* have included only physical-layer functions and a fixed-function MAC. These devices are generally compliant with a single specification or version of a specification. Thus any changes to the underlying specification require hardware modifications for the MAC to be compliant, resulting in lengthy and expensive product development cycles." The invention of claim 2 provides a programmable media access controller that allows changes to the underlying specification to be implemented without changing the media access controller hardware. Thus, contrary to disclosing the invention of claim 2, Goldberg only discloses the prior art discussed in the background of the invention – integrated, non-programmable media access controllers. The cable modem of Goldberg, while disclosing a media access controller, fails to disclose one that is programmable, or even to provide a motivation for combining Goldberg with Neal, Mohammed or Johnson – as disclosed in Goldberg, the integrated version of DOCSIS is provided for the rapid development of inexpensive consumer-oriented cable data appliances. Any changes to the underlying specification would be handled in Goldberg by simply rapidly developing a new inexpensive consumer-oriented cable data appliance, not by providing such cable data appliances with a relatively more expensive structure that would allow the cable modem to have a programmable media access controller.

Claim 4 stands rejected under 35 U.S.C. 103(a) as being unpatentable over Neal, Mohammed, and Johnson as applied to claim 1 and further in view of Gaillard et al. This rejection is respectfully traversed. As described above, Neal, Mohammed, and Johnson fail to disclose anything other than a block cable modem acting as an interface to a cable – a programmable media access controller is not even remotely suggested by the combination of Neal, Mohammed, and Johnson. As such, there would be no suggestion to incorporate a direct memory access controller into the block cable modems 14 and 28 of Mohammed, much less one

that is operable selectively to provide a portion of the cable media to one of the plurality of processors and to provide the off-loaded portion of the cable media to the peripheral processing device. Furthermore, there is no disclosure in Gaillard that it can be used in a cable modem or even in any modem, much less that it can be used to selectively to provide a portion of the cable media to one of the plurality of processors and to provide the off-loaded portion of the cable media to the peripheral processing device. Thus, Gaillard fails to compensate for the deficiencies of Neal, Mohammed, and Johnson, and the rejection of claim 4 under 35 U.S.C. 103(a) as being unpatentable over Neal, Mohammed, and Johnson as applied to claim 1 and further in view of Gaillard et al. is improper and should be withdrawn.

Claim 7 stands rejected under 35 U.S.C. 103(a) as being unpatentable over Neal, Mohammed, and Johnson as applied to claim 1 and further in view of Angle et al. This rejection is respectfully traversed.

Neal, Mohammed, and Johnson as applied to claim 1 and further in view of Angle et al. fails to provide a prima facie basis for the rejection of claim 7, as they fail to disclose each element of the claimed invention. Claim 7 includes that “the plurality of processing functions comprises media access control functionality.” While Angle does at least disclose a media access controller, again, it is a media access controller for use in local or wide area network segments in a data communications network, and no cable modem functionality or application is disclosed or suggested by Angle. Angle, col. 1, lines 37-38. There is no disclosure in Angle to make up for what is missing from Neal, Mohammed, and Johnson, nor to provide any motivation for combining Angle with the simple, unidirectional cable modem of Mohammed. The rejection of claim 7 is improper and should be withdrawn.

Claim 8 stands rejected under 35 U.S.C. 103(a) as being unpatentable over Neal, Mohammed, and Johnson as applied to claim 1 and further in view of Odawara et al. This rejection is respectfully traversed.

Neal, Mohammed, and Johnson as applied to claim 1 and further in view of Odawara et al. fails to provide a prima facie basis for the rejection of claim 8, as they fail to disclose each element of the claimed invention. Claim 8 includes “one of the plurality of processors employs embedded code to support media access control functionality.” While the Examiner acknowledges that Odawara fails to disclose a cable modem, it is asserted that a LAN adapter is “analogous to the cable modem of claim 8.” Again, Odawara fails to provide what is lacking in

Neal, Mohammed, and Johnson. LAN adapters, while perhaps being analogous to cable modems on some level, are not cable modems, and it is not possible to use a LAN adapter as a cable modem or a cable modem as a LAN adapter. The only cited art that discloses a cable modem, namely, Mohammed, fails to disclose that a media access controller is used in a cable modem, and more importantly, fails to suggest why there would be any motivation for combining Mohammed with other references so as to make the non-existent media access controller programmable. The rejection of claim 8 is improper and should be withdrawn.

Claims 9, 10, 16, 17, and 18 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Neal, Mohammed, and Johnson as applied to claim 1 above, and further in view of Pemmaraju. This rejection is respectfully traversed.

Neal, Mohammed, and Johnson as applied to claim 1 and further in view of Pemmaraju fails to provide a prima facie basis for the rejection of claims 9, 10, 16, 17, and 18 as they fail to disclose each element of the claimed invention. For example, claim 9 includes a "cable modem device, comprising: a bifurcated bus structure comprising a first bus and a second bus; a partitioned processor structure, communicatively coupled to the first bus, comprising a plurality of processors, that is operable to perform a plurality of processing functions; a co-processor, communicatively coupled to the second bus, that is operable to support processing of cable media that is selectively off-loaded from at least one of the plurality of processors; an input/output interface, communicatively coupled to the second bus, that is operable to perform data transfer of a plurality of data to the second bus; and a direct memory access controller that communicatively couples the first bus and the second bus and that is operable to support off-loading of at least one function of the plurality of functions to the co-processor." Pemmaraju again fails to disclose a cable modem, leaving Mohammed as the only reference that discloses a cable modem. So, where is the motivation for taking the block cable modem of Mohammed and providing it with "a bifurcated bus structure comprising a first bus and a second bus; a partitioned processor structure, communicatively coupled to the first bus, comprising a plurality of processors, that is operable to perform a plurality of processing functions; a co-processor, communicatively coupled to the second bus, that is operable to support processing of cable media that is selectively off-loaded from at least one of the plurality of processors; an input/output interface, communicatively coupled to the second bus, that is operable to perform data transfer of a plurality of data to the second bus; and a direct memory access controller that

communicatively couples the first bus and the second bus and that is operable to support off-loading of at least one function of the plurality of functions to the co-processor?” There is none. The simple cable modem of Mohammed does not require any such functionality – it merely provides a one-way receiver for receipt of data from a headend server 8. It is not a network  
5 device, like a LAN interface. It uses an analog modem and a separate communications medium such as telephone line 36 for upstream communications.

Likewise, claim 17 includes a “method to perform processing within a cable modem, the method comprising: performing cable media processing using a plurality of processors, the cable media processing is partitioned, at least in part, between at least two of the plurality of  
10 processors; selectively off-loading a portion of the cable media from at least one of the plurality of processors to a co-processor; and processing the off-loaded portion of the cable media using the co-processor.” Why is such a method needed with the simple cable modems 14 and 28 of Mohammed? All they do is to provide downstream data from cable modem 14 to cable modem 28. Why would the cable modems of Mohammed be required to perform cable media processing  
15 using a plurality of processors, the cable media processing partitioned, at least in part, between at least two of the plurality of processors, or to selectively off-load a portion of the cable media from at least one of the plurality of processors to a co-processor, or to process the off-loaded portion of the cable media using the co-processor? Only by using the disclosure as a blueprint could one use the various parts and pieces of the cited art to assemble the invention of claim 17.  
20 The rejections of claims 9 and 17 are improper and should be withdrawn. Claim 10 and 16 depend from claim 9, and claim 18 depends from claim 17, and each are allowable for at least the reasons that they depend from an allowable base claim and add limitations not found in the prior art.

Claims 11 and 15 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Neal,  
25 Mohammed, Johnson, and Pemmaraju as applied to claim 9 above, and further in view of Flynn. These rejections are respectfully traversed.

As previously described in detail, Neal, Mohammed, Johnson, and Pemmaraju fail to provide a prima facie basis for the rejection of claim 9, from which claims 11 and 15 depend. Flynn fails to cure the noted deficiencies of Neal, Mohammed, Johnson, and Pemmaraju. It, too,  
30 fails to mention cable modems, and provides no motivation to be combined with Neal, Mohammed, Johnson, and Pemmaraju to provide the invention of claims 11 and 15, both of

which are drawn to cable modem devices. The cited art discloses no motivation to modify the simple cable modems 14 and 28 of Mohammed to yield the invention of claims 11 and 15. The rejection of claims 11 and 15 is improper, and should be withdrawn.

Claims 12, 13 and 20 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Neal, Mohammed, Johnson, and Pemmaraju as applied to claims 9 and 17 above, and further in view of Goldberg. Claims 14 and 19 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Neal, Mohammed, Johnson, and Pemmaraju as applied to claims 9 and 17 above, and further in view of Angle. These rejection are respectfully traversed. As previously described, Goldberg discloses only a cable modem with an integrated, non-programmable media access controller. Likewise, Mohammed provides no motivation for providing the invention of claim 9, from which claim 12 depends, nor of claim 17, from which claim 20 depends. As described in the background of the invention:

The network protocol places requirements on both the headend and the user end. Generally, the headend serves as the network controller, and the user's cable modem must be able to respond to commands from the headend. In cable modems adhering to the well-known OSI reference model, the lowest layer is the Physical layer (PHY), while the next layer up is the Data Link layer. The Data Link layer is segmented into two parts, the Medium Access Controller (MAC), which interfaces with the PHY, and the Logical Link Control (LLC), which interfaces to the MAC and to higher layers. In general, the MAC and LLC provide the following Data Link functionality: transmit and receive data encapsulation, including framing (frame boundary delimitation, frame synchronization), addressing (management of source and destination address), and error detection (detection of physical medium transmission errors); and media access management, including collision avoidance and handling. A physical address or MAC address is a unique Data Link layer address that is assigned to every port or device that connects to a network. Other devices in the network use these addresses to locate specific ports in the network and to create and update routing tables and data structures.

In an effort to coordinate the development of multimedia high-speed data services and the interoperability of network devices, cable operators have formed the Multimedia Cable Network Systems (MCNS) Group in cooperation with the industry research and development consortium CableLabs. The MCNS group has promulgated the Data Over Cable Service Interface Specification (DOCSIS). Other standards, such as DAVIC/DVB have likewise been created. Such standards continue to evolve over time, with the frequent inclusion of additional feature sets.

Previously, integrated cable modem devices have only included physical-layer functions and a fixed-function MAC. These devices are generally compliant with a single specification or a version of a specification. Thus, any changes to

the underlying specification require hardware modifications for the MAC to be compliant, resulting in lengthy and expensive product development cycles.

The prior art cited against the claims that pertains to cable modems merely reflects what was provided in the background of the invention – physical layer functions and fixed functions MACs compliant to a single specification or version of a specification. None of the cited art even refers to the fact that such specifications can be different, or change over time. There is simply no motivation for combining the prior art that pertains to cable modems with the various prior art pertaining to dynamically configurable networks, multitasking, PCI, hardware schedulers, and DMA if there is no reason to provide the cable modems with programmable media access controllers, such as in order to allow the cable modems to be upgradeable to newer versions of specifications. Furthermore, the prior art must suggest a combination that yields the claimed invention – simply finding a reference that refers to the fact that specifications can be different, or change over time would not be sufficient, given the multitude of ways to address that problem. Even with such motivation, assuming, arguendo, that it exists, there is no teaching in any of the cited references for combining them to form the claimed inventions, other than the use of the disclosure as a blueprint, which is not permitted. Withdrawal of all rejections and allowance of all claims is respectfully requested.



## CONCLUSION

In view of the foregoing remarks and for various other reasons readily apparent, Applicants submit that all of the claims now present are allowable, and withdrawal of the rejections and a Notice of Allowance are courteously solicited.

- 5        If any impediment to the allowance of the claims remains after consideration of this amendment, a telephone interview with the undersigned at (214) 969-4669 is hereby requested so that such impediments may be resolved as expeditiously as possible.

- 10        No additional fee is believed to be required with this response. If any applicable fee or refund has been overlooked, the Commissioner is hereby authorized to charge any fee or credit any refund to the deposit account of Akin, Gump, Strauss, Hauer & Feld, L.L.P., No. 01-0657.

Respectfully Submitted,



Christopher J. Rourk

Reg. No.39,348

ATTORNEY FOR APPLICANTS

Date: December 30, 2003  
Akin, Gump, Strauss, Hauer & Feld, L.L.P.  
P.O. Box 688  
Dallas, TX 75313-0688  
Tel. No.: (214 ) 969-2800  
Fax No.: (214) 969-4343